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Serial No.: 09/915,791
Attorney Docket No.: 10541-086

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 2834

Examiner: Jaydi A. Aguirrechea

Inventors: Jon Barry Joachim

Serial No.: 09/915,791

Filing Date: July 26, 2001

Title: Electric Machine Rotor with Crankshaft
Torsional Damper

**DECLARATION OF
INVENTOR
UNDER 37 C.F.R. §1.131**

**Commissioner for Patents
U.S. Patent and Trademark Office
Washington, DC 20231**

Dear Sir:

I, Jon Barry Joachim, hereby declare that:

1. I am the inventor of the invention claimed and described in the above-identified application.

2. Prior to January 5, 2000, I conceived said invention in the subject application in the United States, as evidenced by the Invention Disclosure form (dates redacted) which is attached as Exhibit A.

3. Prior to January 5, 2000, I reduced to practice said invention in the subject application in the United States, as evidenced by the "Records of Completion" (date redacted) found in the Invention Disclosure form which is attached as Exhibit A.

3. Said Invention Disclosure form was completed and submitted prior to January 5, 2000.

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003

Serial No.: 09/916,791
Attorney Docket No.: 10541-086

4. That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statement may jeopardize the validity of the above-identified application, and any patent issuing thereon or any patent to which this declaration is direction.

Dated: March 30, 2004



Jon Barry Joachim

Exhibit A

OLD

OLD HOME | FGTI MAIN PAGE

Current owner company. Change?



| DIRECTORY | FGFI | HUB

Related Links: [View Invention Disclosure](#) | [Assign/Evaluate Disclosure](#) | [View Invention Ranking](#)

Online Invention Disclosure: View Invention Disclosure

Inv. Discl. Docket No: 199-1994

Creation Date:

Approval to submit was given by:

JJOACHIM:

Section 1: INVENTION DESCRIPTION

Title of Invention: ELECTRIC MACHINE ROTOR WITH CRANKSHAFT TORSIONAL DAMPER
Patent Evaluation SVETS
Committee:
CPSC Code: 03.05.08
Originating Country US
Code:
Related Disclosure(s): None

Section 2: PROBLEM & SOLUTION

Description or Comments: A starter/generator (s/g) rotor that incorporates the crankshaft (c/s) torsional damper. This rotor/damper assembly would be located on the front of the c/s - same as current damper pulleys and with similar attachment. The problem: present s/g concepts position the assembly between the engine and transmission - complicating assembly, service, maintenance, and typically requiring unique attaching parts. The solution: position the s/g on the front of the engine. Additionally, integrate the c/s damper into the rotor of the s/g - simplifying and reducing the number of parts. Current s/g concepts are generally located on the rear of the c/s between the engine and transmission - restricting access for installation and service and usually requiring additional features/components for installation. This position also complicates the interfaces with the engine, transmission and electronic controllers. By locating the s/g on the front of the engine, the "traditional" powertrain remains intact. By incorporating a damper into the s/g rotor assembly, the number of separate parts are reduced and simplified. The s/g may even be utilized by the engine

controller to alter/reduce powertrain NVH. The accessory drive remains or can be eliminated.

Attachment: See Section:9 ATTACHMENTS

Section 3: PRIOR ART

Description or Comments: Many found on front of crankshaft dampers (pulley) - none incorporating an electric machine rotor. WO9805882 - ISAD - showing a starter/generator with a damper in the assembly. ISAD concept has a spring type mechanical damper meant for isolation/control of gear rattle in transmission - not for crankshaft torsional vibration control.

Attachment: See Section:9 ATTACHMENTS

Section 4: NEW TECHNOLOGY

Description or Comments: The positioning of the starter/generator (s/g) on the front of the engine. The use of the s/g rotor as the active mass of the crankshaft (c/s) torsional damper (typically an accessory drive pulley (sheave) is the active mass.) The ensuing packaging advantages for the system comprising the s/g and the s/g controller, battery and the other accessory driven components (w/elimination of the front end accessory drive (fead)). A reduction in the complexity of the system interfaces associated with the s/g and powertrain and accessory drive components.

Attachment: See Section:9 ATTACHMENTS

Section 5: DETAILED DESCRIPTION

Description or Comments: With reference to attached paper sketches - starter/generator (s/g) rotor (1) fixedly attached to flange (2) by fasteners (6) forming active mass of rotor/damper assembly. Outer flange (2) fixedly attached to hub (4) through elastomeric element (3). Hub (4) attached to crankshaft (7) on pressfit (typical) bore by bolt(8). Note that rotor (1) attachment to outer flange (2) may be direct by pressfit or by bonding directly to elastomer (3).

Attachment: See Section:9 ATTACHMENTS

Section 6: DATES

Record(s) of Completion:

Date of Completion:

First Production Use:

[Model and Date]

Section 7: CATEGORY QUESTIONS

Invention Category: Mechanical

Category Questions do not exist or not answered.

Section 8: MISCELLANEOUS ITEMS

Is it a Government Contract?: No

If yes, Government Contract Number:

**Identify a government agreement,
partnership, consortium, or other company
involved with conception or first building of
the invention:**

**If disclosed to non-Company personnel,
identify recipient and date:**

Section 9: ATTACHMENTS

File Name	Description
Click on File Name to view and print it. Files submitted before Feb. '00 may be found in OLD & others in NEW	
9881rotdmpr.gif : OLD NEW	Sketch of concept described.

Section 10: INVENTORSHIPCDS or Other Id:

JJOACHIM

Last Name:

Joachim

First Name:

Jon

Middle Name:

Barry

Employment Category:

S

Employment Status:

A

Job Title:

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Payroll Location Code:

1239

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FRL 3139 or VTC-AP 42A20

Maildrop:

1170

Supervisor's CDS Id:

RMOHAN

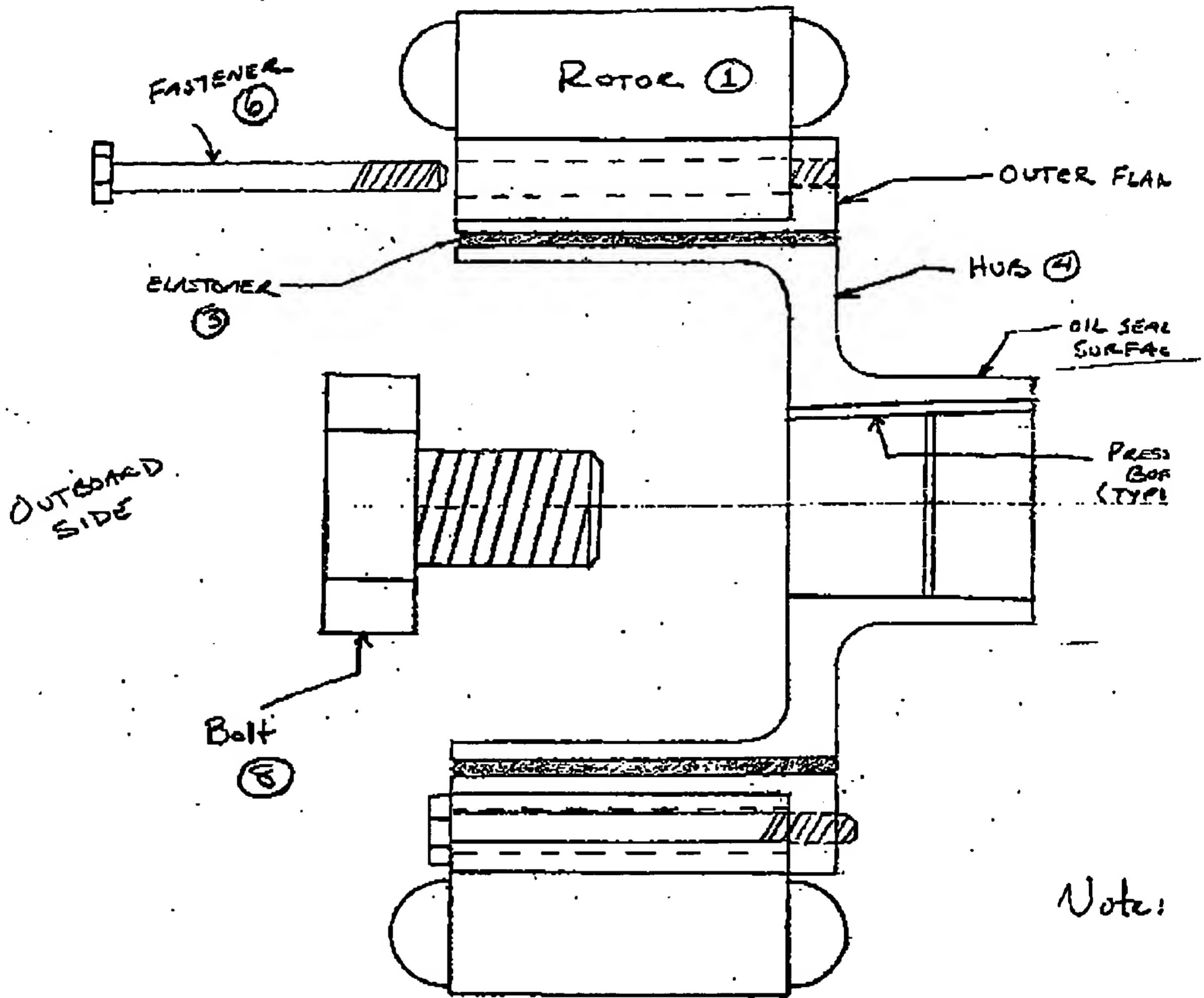
Manager's CDS Id:

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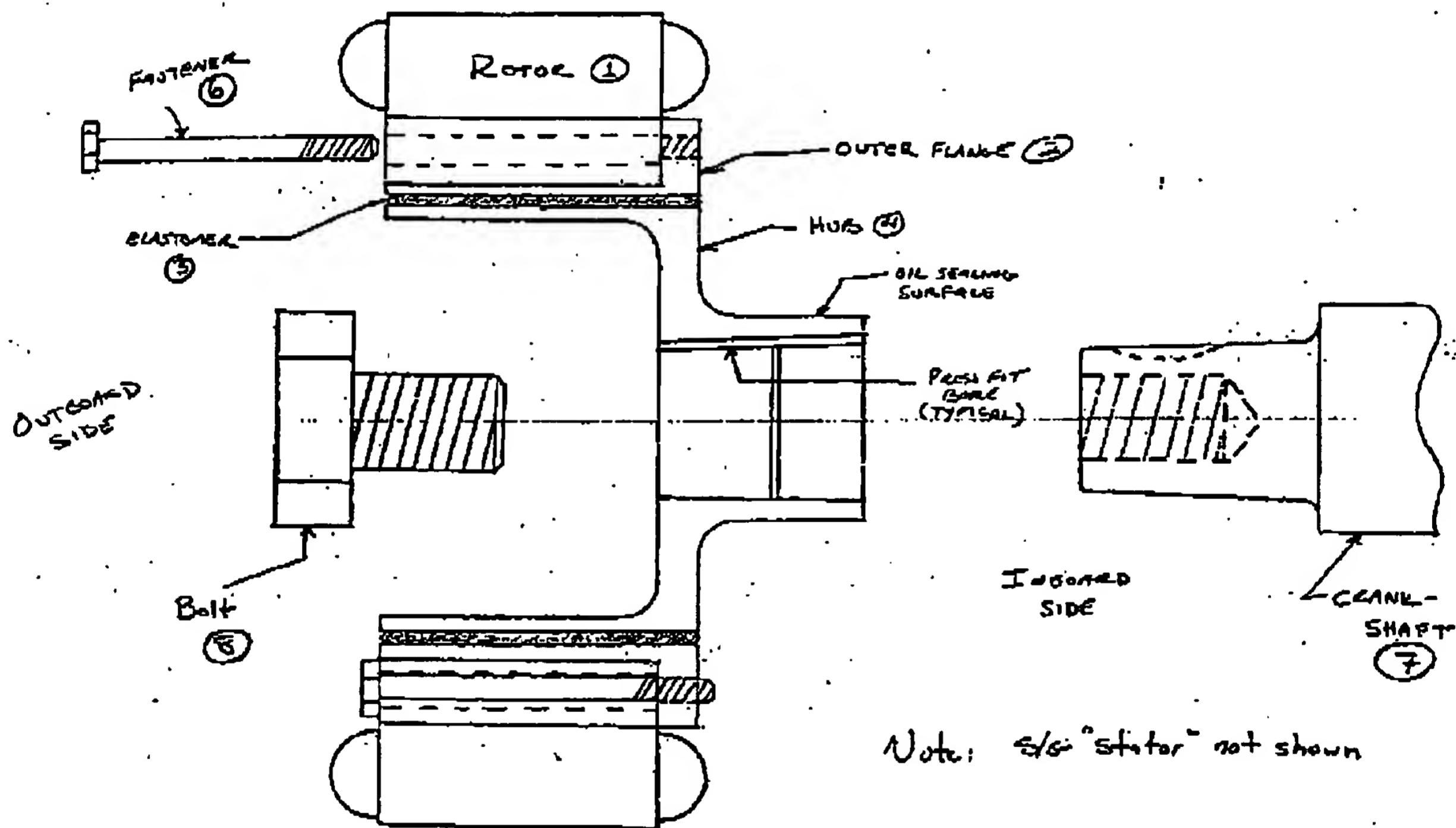
REVIEWED BY [Signature]

S/G Rotor w/Damper Conc



OPTION: Increase rotor ID; Pressfit outer flange
for assembly (vs. bolt on as shown)
Attach FEAD pulley to outbd side if req.

S/G Rotor w/Damper Concept



OPTION: Increase rotor ID; Pressfit outer flange
for assembly (vs. bolt on as shown)
Attach FEAD pulley to other side if req.

J. Joachim